

The upper whorls of this species are sometimes pale and sometimes reddish; this, however, may be due to staining from the animal. The last whorl is invariably reddish, especially the first half.

It is closely related to *O. otostoma*, but may be distinguished by its less convex whorls, the different form of the aperture, and the more thickened peristome, which is scarcely lobed above, and also by the body-whorl being adnate to the spire, whereas in *O. otostoma* it is quite free.

15. *Opisthostoma pumilio*.

Testa *O. Austeni* similis, sed minor, minus conica vel pyramidalis; anfractus 5, perconvexi, liris obliquis leviter distantioribus instructi.

Longit. 2 millim.; diam. maj. $2\frac{1}{4}$, min. $1\frac{1}{4}$; apertura $\frac{3}{4}$ longa et lata.

Hab. Rumbang, Sarawak.

This very small species closely resembles *O. Austeni* in its general features. It is, however, quite distinct. It consists of one whorl less, is of smaller size, has rather more distant liræ or lamellæ, and also a more obtuse or less conical spire. The coloration is the same as in that species.

XXXVII.—*Notes on the Pedipalpi of the Family Tarantulidæ contained in the Collection of the British Museum.* By R. I. Pocock, of the British Museum (Natural History).

[Plates VII. & VIII.]

Family Tarantulidæ.

Subfam. TARANTULINÆ.

(Simon, Ann. Soc. Ent. Fr. 1892, p. 50.)

Three generic names have been employed for the species of this subfamily, i. e. *Tarantula*, *Phrynus*, and *Admetus*. *Tarantula* was first used by Fabricius in 1793 for the species called *Phalangium reniforme* by Linnæus. *Phrynus*, on the contrary, which was also erected for the reception of the same *reniforme*, is not at present known to have appeared in print before 1801; it was then used by Lamarck, who cited the genus as Olivier's (Syst. Anim. p. 175). In the following year Latreille also published the name, and ascribed it to

Olivier (Hist. Nat. Crust. Ins. iii. p. 48). In the face of these facts it seems probable that it was Olivier's intention to establish the genus *Phrynus* for *reniforme*, and that both Lamarck and Latreille were acquainted with his purpose. Nevertheless, since Olivier does not seem to have used the name in print prior to or during 1801, we are compelled to look upon Lamarck as its parent and upon 1801 as the date of its birth. *Tarantula* of Fabricius is consequently its elder by eight years; and the right to the inheritance of the name *reniformis* belongs beyond dispute to the firstborn.

This is the solution of the first difficulty. The second is involved in the identity of *reniformis* of Linnæus. Pallas seems to have been the first to start the confusion on this point, for he identified as *reniformis* a species belonging to a group of which *chiracanthus* of Gervais may be regarded as typical. This opinion was adopted without further question by Dr. Karsch (Arch. Nat. 1879, p. 197), and subsequently by Mons. Simon (Ann. Soc. Ent. France, 1892, p. 51); but, as I have already pointed out (Journ. Linn. Soc. xxiv. p. 406, 1893), Linnæus took as the type of *reniformis* the figure of a species from Antigua which was published by Browne in his 'History of Jamaica'; and this figure represents a specimen which is not congeneric with the *chiracanthus* group, but with what may be termed the *palmatus* group. Moreover, if further evidence in support of this opinion be needed, it may be urged that species of the *chiracanthus* group are unknown in the West Indies, while those of the other section are exceedingly abundant*.

It seems therefore to be perfectly clear that the name *Tarantula* is to be applied to the Neotropical species of Amblypygi, of which *palmatus*, Herbst, seems to be an unmistakable representative.

There is, however, one more name to be taken into consideration. This is *Admetus* of Koch ('Uebersicht des Arachnidensystems,' 1850, p. 81). Four species were included in this genus, namely *pumilio*, *fuscimanus*, and *marginemaculatus* of C. Koch, and *palmatus* of Herbst, occurring in the order named. But the last three are admittedly referable to the group which I have shown should be called *Tarantula*. *Pumilio*, however, belongs to the *chiracanthus* section, and at first sight it seems reasonable to suppose that the species *pumilio* should stand as the type of *Admetus*, in which case the latter name would embrace all the species of

* See Supplementary Note on p. 297 on the identity of *Tarantula reniformis* (Linn.).

the *chiracanthus* group. But the diagnosis of *Admetus* evidently applies to species like *palmatus*, and not to those like *chiracanthus*, and it seems certain that C. Koch would not have placed a species related to *chiracanthus* into *Admetus* if he had known the adult animal. We may therefore conclude that *pumilio* was merely included in *Admetus* owing to the accident of the immaturity of the type specimen.

On these grounds I consider that one of the other species, say *fuscimanus*, should be looked upon as the type of *Admetus*; and in this case *Admetus* must be regarded, like *Phrynus*, as a synonym of *Tarantula*. It thus appears that no authors have given a name that can stand to the *chiracanthus* section of species. I have therefore proposed to term it *Heterophrynus*, with *chiracanthus* as the type (Journ. Linn. Soc., Zool. xxiv. p. 527, 1894).

To these two genera of Tarantulinae I now propose to add a third, namely *Phrynopsis*. The three may be diagnosed as follows:—

- a. Without a backwardly directed apophysis upon the trochanter of the chelæ. Chelæ armed with very many spines, short, stout; femur flat in front, the tibia flat in front and below, nearly straight externally, its upper inner edge more or less produced internally.
 - a¹. Second tarsal segment of the feet partially divided by a transverse membranous line; frontal border of carapace denticulate or dentate. Tarsus of chela usually armed with 6 spines, two of which are much longer than the others; upper edge of tibia armed with many long spines *Tarantula*, Fabr.
Type *reniformis* (Linn.).
 - b¹. Second tarsal segment of feet entire; frontal border of carapace armed with long spiniform teeth. Tarsus of chela armed with but one long spine above and one below; only two of the spines on the upper inner edge of the tibia noticeably longer than the rest *Phrynopsis*, g. nov.
Type *spinifrons*, sp. n.
- b. With a backwardly directed apophysis on the trochanter of the chela. Chelæ armed with fewer spines, long and slender; the femur and tibia nearly cylindrical, the latter distinctly bowed. (Second tarsal of foot undivided.) *Heterophrynus*, Pocock.
Type *chiracanthus* (Gerv.).

To the structural features already mentioned by Simon as characteristic of this subfamily may be added the entire absence of the small semicircular appendages which are found

upon the second abdominal sternite of most of the Old-World species of the group.

The sexes may be always recognized without difficulty. Beneath the genital operculum in the male there is a pair of soft, muscular, weakly chitinized, indistinctly bisegmented, apically bifid organs, which probably function as penes, and may be homologous to appendages*. When the operculum is raised these organs protrude from the aperture. In the female, on the contrary, there are no protrusible organs like the penes beneath the operculum, but there is a pair of rounded membranous eminences affixed to the lower surface of the operculum, each one bearing a pointed, inwardly directed, chitinous claw-like rod. That specimens possessing this structure are females is shown by the fact that they carry egg-sacs and that no specimens of those with the penes have been found with young. Moreover, the latter possess as a rule longer palpi and limbs, characters which by analogy appertain to the male (*vide* Pl. VII. figs. 8, 8 a).

In some of the Old-World genera of this group these sub-opercular structures are not so easy to determine.

Genus TARANTULA, Fabr.

Synopsis of the Species contained in the Collection of the British Museum.

- a. Tibia of the chela armed above with 9 spines, of which the third from the proximal end and the fourth from the distal end are the longest, there being *two* spines between those just mentioned.
- a¹. The spines on the chelæ longer, the longest on the tibia longer than the width of this segment; the fourth and fifth spines from the proximal end of the upper edge of the tibia very unequal in size, owing to the smallness of the fifth; median ocular tubercle larger, higher than the lateral eye-clusters; frontal process less covered.

* The possibility of there being a direct homology between these organs and the missing pectines of the scorpions should be borne in mind. I have already suggested (*Ann. & Mag. Nat. Hist.*, Jan. 1893) that the fact of there being an abdominal sternite missing in the *Pedipalpi*, the tergites being numerically one in excess of the sternites, might perhaps be explained by the enlargement and backward growth of the genital operculum over the second sternite, which in scorpions bears the pectines. If this has taken place, remnants of the pectines might be retained beneath the genital operculum, where, in fact, these penes of *Phrynus* are situated.

- a*². Ocular tubercle strikingly high; spines on the chela very long, the first on the upper-side of the tarsus much larger than the distal one *macrops*, sp. n.
- b*². Ocular tubercle lower, spines on chela shorter, the first on the upper-side of the tarsus smaller than the distal *levifrons*, sp. n.
- b*¹. The spines on the chelæ shorter, the longest on the tibia shorter than the width of the segment; ocular tubercle low, not noticeably higher than the lateral eye-clusters; frontal process more concealed, fifth spine from proximal end of upper edge of tibia only a little shorter than the fourth.
- a*³. The distal spine on the upper edge of the tarsus longer than the proximal *viridiceps*, Pocock.
- b*³. The distal spine on the upper edge of the tarsus shorter than the proximal *azteca*, sp. n.
- b*. Tibia of chela armed above with 7 or 8 spines, of which the third from the proximal end and the fourth or third from the distal end are the longest, there being only *one* spine between these two. The number of spines sinks to 7 when what is the anterior spine or spinule in some species disappears in others.
- a*⁴. The second spine on the tibia of the chela very short, about $\frac{1}{3}$ of the length of the third and $\frac{1}{2}$ of the fourth; there are thus only 3 long spines on this segment, and, owing to the disappearance of the distal spinule, only 7 spines altogether *Whitei* (Gerv.) *.
- b*⁴. The second spine on the upper edge of the tibia of the chela long, nearly as long as the third and almost always longer than the fourth; there are thus at least 4 long spines in this series.
- a*⁵. Tibia of chela slender, spines longer, the longest spine exceeding the width of the segment; lateral eye-clusters mostly closer together, the distance between them only a trifle more than half the median length of the carapace, the anterior margin of which is more coarsely dentate laterally than in the middle; the median eyes not far from the anterior margin; mandible with enlarged tubercle.
- a*⁶. The 6 spines on the tarsus of the chela well developed; frontal process almost concealed.
- a*⁷. Legs exceedingly long; length of femur of first and tibia of third greater than twice the width of the carapace; second tibial of fourth leg equal to distance between eyes *longipes*, Pocock.

* The type of this species is ticketed Burdwan (India), but probably erroneously.

- b⁷. Legs shorter; length of first femur and third tibia less than twice the width of the carapace; second tibial of fourth leg less than distance between the eyes.
 a⁸. Femur of chela armed below with 6 spines; the first spine on the upper edge of femur longer, equal to about half the second *spinimana*, Pocock.
 b⁸. Femur of chela armed below with 5 spines, first on upper edge of femur less than half the second .. *Thorellii*, sp. n.
 b⁸. The first and third inferior spines on tarsus of chela nearly obsolete; frontal process prominent *tessellata*, Pocock.
 b⁵. Tibia of chela stouter, spines shorter, none of them so long as the thickness of the segment.
 a⁹. The first and third inferior tarsal spines of chela moderately long.
 a¹⁰. Femora of legs not distinctly spotted, pattern of abdomen obscure; eyes more widely separated *santarensis*, sp. n.
 b¹⁰. Femora of legs distinctly spotted with yellow, a yellow ring round the tergal impressions; eyes closer together .. *pulchripes*, sp. n.
 b⁹. The first and third inferior tarsal spines of chela minute.
 a¹¹. Distance between the lateral eyes equal to about half the median length of the carapace; of larger size *reniforme* (Linn.)*.
 b¹¹. Distance between the lateral eyes greater than half the median length of the carapace.
 a¹². Distance between the median ocular tubercle and the anterior edge of the carapace less than the long diameter of the tubercle; first superior tarsal spine distinct but small.
 a¹³. Frontal process invisible from above; darker, variegated *Gervaisii*, sp. n.
 b¹³. Frontal process completely visible from above; abdomen pale, of a uniform colour *barbadensis*, Pocock.
 b¹². Distance between the median tubercle and the anterior edge equal to twice the diameter of the tubercle; first upper tarsal spine almost obsolete *latifrons*, Pocock†.

* Syn. *Pallasii*, Blanchard; see Note, p. 297.

† The species I described as *Keyserlingii* in Journ. Linn. Soc., Zool. xxiv. p. 539, is referable, I now think, to this species. On p. 540 of the above paper I compared *Keyserlingii* to a species named *scabra*; for *scabra*, *Pallasii*, Blanch., should be substituted, the former being the name I had applied to the species before discovering that Blanchard had already given it a name. (See also Note, p. 297.)

Tarantula lævifrons, sp. n. (Pl. VII. figs. 1, 1 a.)

Colour blackish brown, with ferruginous spots on the upper surface and on the borders of the carapace; others marking the muscle-impressions and the postero-lateral angles on the terga; two indistinct flavous spots on the femora.

Granulation of the upper surface not coarse.

The frontal portion of the *carapace* not abruptly sloped mesially, although more so at the sides; the distance between the lateral eyes less than half the median length of the carapace and twice the distance between either tubercle and the lateral or front border; median tubercle tolerably high, scarcely wider than long, separated from the front border by a space which is less than its longitudinal diameter; the anterior border, concealing the median frontal spine, straight and scarcely at all denticulate.

Mandibles almost smooth above, without enlarged terminal tubercle.

Chelæ robust, not coarsely granular; the first inferior spine on the *femur* long, as long as the height of the segment, the length of which is one third greater than the distance between the eyes; on the upperside of the segment the second and third spines are much longer than the fourth and fifth, which are short. *Tibia* moderately broad, its upper inner edge armed with 9 spines, the first small, the second medium, the third very long, as long as the sixth, the fourth a little shorter, the fifth of medium size, the seventh a little bigger than the fifth, the eighth and ninth quite small; the longest of these spines, *i. e.* the third, is equal to the width of the tibia. *Tarsus* a little longer than the width between the lateral eyes, armed with the usual three spines above, but in addition there is an extra spine just in front of the third, the first and third of the inferior spines of medium size.

Legs.—Femur of first nearly twice as long as the width of the carapace, of the second much longer than the width of the carapace, slightly shorter than that of the third and as long as the femur and patella of the fourth; tibia of the second as long as the femur, of the third slightly longer, of the fourth considerably longer; in the fourth the second and third tibials together are equal to the protarsus and almost three quarters the length of the first tibial; the second tibial more than half the length of the third and equal to two thirds of the distance between the eyes.

Measurements in millimetres.—Total length 24; carapace, width 13·5, median length 9, distance between lateral eyes 4. Chela: length of femur 6, height 3, length of longest spine 3;

tibia, length 9·2, thickness 3·5, length of longest spine 3·5; length of tarsus 4·5, of digit 5. Legs: femur of first 33·5, of second 17, of third 17, of fourth 15; tibia of second 17, of third 19, of fourth 18.

Loc. West coast of America (probably Ecuador or Colombia). Collected by the officers of H.M. ships 'Herald' and 'Pandora.'

The British Museum has three examples, one adult (the type) and two young. In the latter the yellow spots on the legs and trunk are much more conspicuous than they are in the adult.

Tarantula azteca, sp. n. (Pl. VII. fig. 2.)

Colour almost entirely blackish brown, without distinct flavous spots or bands.

Granulation not very coarse.

Carapace with its frontal region gently sloped downwards and forwards; distance between the lateral eyes less than the longitudinal length of the carapace and about twice the distance of either lateral eye-cluster from the anterior or lateral border of the carapace; median tubercle nearly spherical, separated from the anterior border by a space which is about equal to its long diameter. The anterior border rather narrow, distinctly emarginate, evenly and moderately coarsely denticulate.

Mandibles smooth or nearly so above, without enlarged tubercle.

Chelæ elongate, robust, the spines short; the *femur* above nearly twice as long as the distance between the eyes, armed above with 6 spines, of which the first, the double one, is noticeably shorter than the second, which is equal to the third; the fourth minute, the fifth a little larger than the fourth, the sixth minute, about the size of the fourth; below, the first three teeth are long and subequal, the first being slightly the longest; the fourth and sixth spines very minute, the fifth of medium size; the first shorter than the height of the femur. *Tibia* much wider than its longest spine, its upper edge armed with 9 spines, the eighth and ninth minute, the first also minute, the second less than half the length of the third, which is longer than the fourth, which is longer than the fifth, sixth about equal to the fourth, seventh about equal to the second; armed below with 5 spines and some interspersed spinules. The first and third inferior spines of the *tarsus* very short.

Legs.—Femur of first greater than the length of the carapace by about one third of its length; femur of second greater

than the width of the carapace, a little shorter than that of the third and considerably exceeding that of the fourth; tibiae of second, third, and fourth about equal to the femora; first and second tibials of the fourth nearly two thirds the length of the first tibial, but distinctly shorter than the protarsal, the second tibial about half the length of the third and barely equal to half the distance between the eyes.

Measurements in millimetres.—Total length 23; carapace, width 12.8, median length 7.8, distance between the eyes 3.5. Chela: length of femur 6.8, height 3, length of longest spine 2; tibia, length 9.5, thickness 3.5, length of longest spine 2.5; tarsus 4.3, digit 4. Legs: femur of first 19, of second 15, of third 15.5, of fourth 13; tibia of second 13.8, of third 15.2, of fourth 14.

Loc. Mexico (Tuxtla and Oaxaca).

I have seen four examples of this species from Tuxtla—the type, which is the largest, and three others—and one from Oaxaca, and one ticketed merely Mexico.

The example from Oaxaca presents the curious anomaly, which may perhaps be termed atavistic, of having the posterior tibia on one side undivided and on the other divided into only two segments, as in the type of *santarensis*. In other characters, however, this example agrees with the type.

Tarantula macrops, sp. n. (Pl. VII. figs. 3, 3 a.)

Colour of carapace and chelæ nearly black, the marginal spots on the former indistinct; the principal terga adorned on each side with a reddish-yellow patch, which embraces the muscular impression and spreads outwards and backwards towards the posterior angle. Spots on the femora visible but indistinct.

Granulation of the upper surface of the trunk not coarse and somewhat sparse.

Carapace with frontal region convex anteriorly; area in front of the lateral eyes nearly vertical; distance between the eyes less than the median length of the carapace and twice as great as the distance between the eyes and the anterior or lateral border; median tubercle very high, shining, with vertical sides, wider than long, separated from the anterior border by a space which is distinctly less than its longitudinal diameter; anterior border straight from side to side, very weakly denticulate, only very slightly overlapping the median frontal process, the apex of which, being slightly turned forwards, is just visible from above.

Mandibles very slightly granular, with two terminal tubercles a little enlarged.

Chelæ rather slender; spines long and arranged upon the same plan as in *T. azteca*, but the spines are much longer, the first and second on the lower surface of the femur being subequal and much longer than the third, which is about equal to the fourth; the first greater than the height of the segment; spines on the upper edge of the tibia very much longer than in *azteca*, the longest being greater than the width of the segment; the first spine on the upper edge of the tarsus long, the third minute, the first and third on the lower surface minute.

Legs long; femur of first more than twice the width of the carapace, that of the second greater than this width by one third of its length, shorter than that of the third and about equal to that of the fourth; *tibia* of the second about equal to its femur, that of the third greater by about the length of the patella, that of the fourth still greater as compared with its femur; the second and third tibials about two thirds the length of the first, about equal to the protarsus, the second less than half the length of the third and equal to about two thirds of the distance between the eyes.

Measurements in millimetres.—Total length 19; carapace, median length 7, width 11, distance between eyes 3·2. Chela: length of femur 5, height 2, length of longest spine 2·8; tibia, length 8, width 2·8, longest spine 3·5, tarsus and digit 4. Legs: femur of first 24, of second 16, of third 17·5, of fourth 15·5; tibia of second 16, of third 18·5, of fourth 18·2.

Loc. S. America. A single dry male example.

Tarantula Thorellii, sp. n. (Pl. VII. fig. 7.)

Colour chestnut; abdomen pale, without distinct pattern; femora of legs feebly spotted.

This species is nearly related to *T. tessellata* and *T. Pallasii*, but it is much smoother than either. The distance between the lateral eyes is less than half the median length of the carapace; the median tubercle is separated from the anterior border by a distance which is about equal to its longitudinal diameter; this border is emarginate and dentate, as in *T. Pallasii* and *T. tessellata*, but the median frontal process does not project forwards as in *T. tessellata*, being considerably overlapped by the carapace.

The *chelæ* are long and slender, as in *T. tessellata*, the trochanter armed with 4 spines, as in *Pallasii* and *tessellata*; spine-armature of femur and tibia approximately the same as in *T. tessellata* and *Pallasii*, but the first superior femoral spine is much shorter, being scarcely more than one third of

the length of the second. The rest of the spines are on the whole longer than in *tessellata*, and the first and third on the lower surface of the tarsus are long and acute, these same spines, especially the third, being short in both *Pallasii* and *tessellata*.

Legs almost as in the male of *T. tessellata*, but with the femur of the fourth almost as long as that of the second (*cf.* measurements), and the second tibial of the fourth leg almost more than three quarters the length of the third tibial and about three quarters of the distance between the eyes.

It is also related to *longipes*, as shown by the presence of three well-developed spines on the lower edge of the tarsus of the chela.

Measurements in millimetres.—Total length 22; median length of carapace 8·5, width 12·8, distance between eyes 3·6. Chela: femur, length 6·5, height 2·5, length of longest spine 2·6; tibia, length 9·5, width 3, length of longest spine 4; length of tarsus 5, of digit 4·5. Legs: femur of first 24·5, of second 16, of third 16·5, of fourth 15; tibia of second 16, of third 18, of fourth 17.

Loc. —?

A single male example.

Tarantula pulchripes, sp. n. (Pl. VII. figs. 6, 6 a.)

Colour blackish, with distinct flavous marginal spots on the carapace; a flavous ring round the muscular impressions of the terga, one flavous spot on the upperside of the trochanter, and three on the femora of the posterior three pairs of legs.

Granulation of the trunk rather fine.

Carapace with its front border lightly emarginate and conspicuously and evenly dentate, completely overlapping the median process, which is thus concealed from above; distance between the lateral eyes about half the median length of the carapace, twice as great as the distance between a lateral eye and the anterior border, and more than twice the distance between the lateral eye and the lateral border; the frontal region gently sloped downwards and forwards, steeper below the lateral eye; the median tubercle wider than long, separated from the front border by a space which is a little less than its longitudinal diameter.

Mandibles very slightly granular above, with the external distal tubercle slightly enlarged.

Chelæ robust; *femur*, which is longer by about one third of its length than is the distance between the eyes, coarsely granular above; spine-armature of the appendage as follows:—femur above 5 and some spinules, below 5 (the

proximal two very long) and a small sixth; *tibia* above 8, a very minute ninth, below 5 and some spinules; *tarsus* above 4 (the distal minute), below 3; the first and third spinules on the lower edge of the *tarsus* long, the longest on the *tibia*, *i. e.* the third from the proximal end, is less than the width of the segment, and the longest on the *femur* less than the height of the segment.

Legs.—*Femur* of first longer than width of carapace by one third of its length, that of the second a little longer than width of carapace, a little shorter than the *femur* of the third and as long as the *femur* and *patella* of the fourth; *tibia* of the second equal to its *femur*, of the third a little longer, of the fourth still longer than its *femur*; the second and third *tibial* of the fourth a little longer than the *protarsal* and about two thirds the length of the first *tibial*; the second *tibial* half the length of the third and half the distance between the lateral eyes.

Measurements in millimetres of largest specimen.—Total length 17; carapace, median length 7, width 11, distance between eyes 3.5. Chela: *femur*, length 5.2, height 2.8, length of spine 1.8; *tibia*, length 8, width 3.3, length of spine 2.5; length of *tarsus* 3.7. Legs: *femur* of first 17, of second 13.8, of third 14.5, of fourth 12; *tibia* of second 13.5, of third 15.5, of fourth 13.

Loc. Colombia (Goudot coll.).

I have seen three dried examples of this species, namely the type (which is probably a male), a female with egg-sac, and a smaller example, which is probably also a female. The latter two differ from the type in having shorter chelæ and legs; for instance, the upperside of the *femur* of the chela is only very slightly longer than the distance between the eyes, and the *femur* of the second leg is about as long as the width of the carapace.

Tarantula santarensis, sp. n.

No detailed description of this species is necessary, on account of the closeness of its relationship to *T. pulchripes*. It appears to differ in the following particulars:—

There are no definite yellow spots on the *femora* of the legs, these segments being rather describable as ferruginous, with faint fuscous patches; so, too, with the abdomen—the upperside of this region, instead of being black, with very clearly defined yellowish-red rings round the black muscular impressions, is in this form ferruginous, with three faintly defined fuscous patches on each tergite, one being median and the others lateral.

The lateral *eyes* are a little further apart.

The lower surface of the femur and tibia of the *chela* are smoother below than in *pulchripes*, and the third spine on the upperside of the tarsus more nearly approaches the second in length; moreover, the second long spine on the upperside of the femur is longer than the first, and not noticeably shorter than it as it is in *pulchripes*.

Measurements in millimetres.—Total length 20; median length of carapace 7, width 12, distance between eyes 4. Chela: length of femur 4·5, of tibia 7·5; tarsus 3·8, digit 3·4. Legs: femur of first 16, of second 12·5, of third 13·5, of fourth 10·5; tibia of second 10·5, of third 12, of fourth 10·5.

Loc. Santarem, Brazil (*Wickham Coll.*).

The type and only known example of this species is a female. Curiously enough it presents a remarkable abnormality in the development of its posterior tibiæ, that on the right side being undivided and that on the left divided into only two segments.

Tarantula Gervaisii, sp. n. (Pl. VII. figs. 5, 5a.)

Colour as in *T. pulchripes*, but with the spots upon the legs and trunk much less clearly defined.

Resembling *T. pulchripes* in size and general appearance, but apparently differing in the following features:—The anterior border of the *carapace* is wider, straighter, and more finely and less closely denticulate; the lateral eyes are equidistant from the anterior and lateral edge on each side, and the distance is distinctly less than half the space between the eyes, which is noticeably greater than half the median length of the carapace, and almost equal to the length of the upperside of the femur of the chela.

Mandibles smooth above, with no enlarged terminal tubercle.

Chelæ in shape and spine-armature resembling those of *T. pulchripes*, but the first and third spinules on the lower side of the tarsus are short, the fourth on the upperside is not noticeably elongate, and there is no spinule below the eighth on the upper edge of the tibia.

Legs shorter than in the type of *T. pulchripes*, but approximately the same length as those of the female of that species; the femur of the first longer than the width of the carapace by about one quarter of its length, that of the second about equal to that of the third, a little greater than, and that of the fourth a little less than, the width of the carapace; tibiæ of the same comparative length as in *T. pulchripes*, the second tibial of the

fourth leg equal to about one third of the distance between the eyes.

Measurements in millimetres of type.—Total length 11·5; carapace, median length 7, width 11·5, distance between eyes 4·5. Chela: length of femur 5, tibia 7·5, tarsus 3·7, digit 4·3. Legs: femur of first 16, of second 12·5, of third 13·3, of fourth 10·5.

Loc. Colombia (Magdaleine). Goudot Coll. Type. Also specimens of apparently the same species from Venezuela, Trinidad, and British Guiana.

Genus PHRYNOPSIS, nov.

The two known species of this genus may be recognized as follows:—

- a. The spine between the two longer ones on the upper edge of the tibia of chela as long as the third spine from the distal end of this segment; the spines forming the proximal half of this series smaller, the spinules larger *coronatus* (Butl.).
- b. The spine between the two longest on the upper edge of the tibia minute, much smaller than the third from the distal end; the spines forming the proximal half of this series larger, the spinules smaller *spinifrons*, sp. n.

I have seen one example of each of these species. That of *coronatus*, contained in the late Count Keyserling's collection, is dried and much mutilated and has no locality assigned to it. It agrees, however, so far as I can judge, with Mr. Butler's figure and description of the type, which is in the hands of the Rev. O. P. Cambridge. The example of *spinifrons* from Ciudad, in Mexico, will be figured and more thoroughly described in a future publication.

Genus HETEROPIRYNUS, Pocock.

Heterophrynus, Pocock, Journ. Linn. Soc., Zool. xxiv. p. 527 (in note).

This genus contains *H. pumilio*, C. Koch (Die Arachn. viii. p. 15), from Brazil, and *H. gorgo*, of Wood (Tr. Am. Phil. Soc. xiii. p. 440), from Peru.

We have neither of these species, to my knowledge, in the British Museum. *H. pumilio*, however, will very probably prove to be the young of one of the four enumerated below.

The species that I have succeeded in identifying are:—

H. chiracanthus (Gervais), Journ. Inst. Soc. Phil. Paris, 1842, p. 72; Ins. Apt. iii. p. 4.

H. Batesii, Butler, Ann. & Mag. Nat. Hist. (4) xii. p. 120.

H. longicornis, id. t. c. p. 123.

The four may be briefly diagnosed as follows:—

- a. Spines on femur of chela $\frac{5}{4}$; on tibia $\frac{6}{5}$; tarsus externally granular *cervinus*, sp. n.
- b. Spines on femur of chela $\frac{5}{3}$; on tibia $\frac{7}{6}$; tarsus externally smooth.
 - a¹. Chelæ in males short, the femur only a little longer than the width of the carapace; second spine on lower edge of tibia much shorter than the first and third, distal spine on lower edge of tibia longer and stronger than the one that precedes it. *longicornis* (Butl.).
 - b¹. Chelæ, at least in the adult males, exceedingly long and slender, about twice the width of the carapace; distal spine on lower edge of tibia not longer than the one that precedes it.
 - a². Second spine on the femur of the chela subequal to the first and third; chelæ stouter, spine-armature stronger *chiracanthus* (Gervais).
 - b². Second spine on femur noticeably shorter than first and third; chelæ thinner, spines shorter and weaker *Batesii* (Butl.).

Heterophrynus chiracanthus (Gervais).

Of this species we have three adult examples from Demerara (types) and one which has no locality. The specimen from New Granada which Butler referred to this form belongs, I think, to his *Batesii*. Mons. Simon (*loc. cit.* p. 51) wrongly referred this species to the *palmatus* group.

Heterophrynus Batesii (Butl.).

Very nearly allied to the preceding. We have dry examples (types) from the Upper Amazons, one (also dry) from New Granada, and three in spirit ticketed S. America.

Heterophrynus longicornis (Butl.).

Four (including type), dry, from Para, and one, in spirit, from Santarem.

The example from Para that Mr. Butler identified as *H. gorgo* of Wood was one of the specimens of *H. chiracanthus* which had exchanged labels with one of the examples of *longicornis*.

Heterophrynus cervinus, sp. n. (Pl. VIII. fig. 1.)

Colour nearly black, legs and lower surface ferruginous.

Carapace of normal form, the cephalic region coarsely granular, the posterior portion with about three radiating rows of granules, the rest smooth; the anterior border straight, finely denticulate, the median tubercle, which is high and bears two tubercles on its summit, separated from the anterior border by a space which equals half a diameter; distance between the lateral eyes considerably less than half the median length of the carapace.

Mandibles finely granular, a small terminal tubercle.

Chelæ.—*Coxæ* finely granular internally, more coarsely granular behind, the rest smooth; *trochanter* smoothish in front, with a row of fine denticles above and four spines below, three on the inferior edge, of which the median is very long, and one at its distal angle; *femur* less than twice the width of the carapace, thickly and coarsely granular, armed with five spines above, the first two rising from the same base, the third the longest, the fourth and fifth decreasing in length, the lower edge armed with four spines, which gradually decrease in length from the first to the fourth; *tibia* coarsely granular, longer than the femur, with only one spine behind the three principal ones on the upper edge, the last spine much longer and stouter than the penultimate, lower edge armed with 5 spines, of which the third from the end is the longest, although the last is longer and stouter than the one that precedes it; *tarsus* granular outside and inside, the first spine long, considerably more than half the length of the second.

Legs long; femur of first three and a half times the width of the carapace, that of the second about twice its width, that of the third a shade longer than that of the second, which is longer than that of the fourth (for the rest see measurements).

Abdomen.—Terga with a row of granules along posterior border; for the rest the terga are nearly smooth, there being only two or three granules on each side of the middle. *Sterna* sparsely granular. *Genital operculum* coarsely granular.

Measurements in millimetres.—Total length 31; width of carapace 17, median length 11, distance between eyes 4. Chela: length of femur 30, width 2.5; length of tibia 34.5, of tarsus 9.5, of digit 6. Legs: femur of first 59, of second 33.5, of fourth 32; tibia of second 35.5, of third 39, of fourth 39, first tibial of latter 5.5.

A single male example from New Granada, ticketed, probably by either Gervais or Goudot, *Phrynus chiracanthus*.

Subfam. *PHRYNICHINÆ*.

(Simon, *loc. cit.* p. 49.)

The following three genera of this subfamily are known to me :—

- a.* Tibiæ of the fourth pair of legs undivided,
mandibles larger *Phrynichus*, Karsch.
Type *lunatus* (Pall.).
- b.* Tibiæ of fourth pair of legs bisegmented,
mandibles smaller.
 - a*¹. Second abdominal sternum furnished
with a pair of half-moon-shaped ap-
pendages; larger *Titanodamon*, g. nov.
Type *Johnstonii*, sp. n.
 - b*¹. Second abdominal sternum without ap-
pendages; smaller *Nanodamon*, g. nov.
Type *annulatus* (Wood).

The genus *Damon* of C. Koch, of which the type is *variegatus* of Perty, also belongs to this group. According to Simon it is congeneric with the West-African forms to which I have given the name *Titanodamon*. Unfortunately I have had no opportunity of examining either *variegatus* or any allied species from the same geographical area (*i. e.* South America); and my reasons for proposing the two new generic names given above are: (1) my ignorance as to whether *variegatus* of Perty possesses the abdominal appendages or not, and (2) my opinion that the South-American forms, if indigenous, possess in all probability some hitherto undiscovered characters by which they may be generically recognized from the two African genera. This *à priori* supposition may of course prove erroneous; but analogy justifies its conception until proof on the matter is forthcoming.

Genus TITANODAMON.

The British Museum has examples of the three following species :—

- a.* Frontal process small, vertical, with its apex acute and turned forwards.
 - a*¹. The posterior of the three long spines on the tibial segment of the chela short, not half the length of the median spine; the second tibial segment of the fourth leg less than, or, at least, not greater than, the distance between the eyes. *tibialis* (Sim.).

- b¹. The above-mentioned spine long, about two thirds the length of the second spine; the tibial segment greater than the distance between the eyes. *bassamensis* (Luc.).
- b. Frontal process directed downwards and forwards and ending in a bluntly rounded apex; eyes spaced as in *tibialis*; the tibial spine as in *bassamensis* . . *Johnstonii*, sp. n.

Titanodamon bassamensis (Lucas).

Phrynus bassamensis, Lucas, in Thomson's Archives Ent. ii. p. 434 (1858).

Phrynus granulatus, Butler, Ann. & Mag. Nat. Hist. (4) xii. p. 122, pl. vii. fig. 10 (1873).

Phrynus Savatieri, Rochebrune, Bull. Soc. Philom. viii. p. 28.

Phrynus medius (Herbst), Simon (at least formerly): Butler, *loc. cit.* p. 120 in part.

We have ten examples that I believe to be referable to this species. Some are without localities; others, however, are ticketed Sierra Leone and Ashanti. It is on the strength of these latter two localities that I venture to regard *Savatieri* and *bassamensis* as identical. The former was recorded from Senegal and the latter from Grand Bassam, which is close to the locality Dixcove, in Ashanti, whence one of the British Museum examples came.

The type of *granulosus*, Butler, *i. e.* the specimen figured, which is provided with ova and preserved in alcohol, is referable to the same species; but its locality, which, by the way, is indicated as doubtfully S. America, is probably erroneous. The dried specimen mentioned by Mr. Butler as belonging to this species is an example of the South-American species *Heterophrynus chiracanthus* (Gerv.).

Why this species should be identified as *medius* of Herbst* I cannot understand. Herbst's figure represents an animal with much stouter and shorter chelæ, and the tibia has no less than four large spines upon it, the fourth large spine from the distal end being approximately equal to the third. In this character it differs from all the species of the genus known to me.

Titanodamon Kochii, Butler (*loc. cit.* p. 120), established for the specimen probably wrongly identified as *T. medius* (Herbst) by Koch, is perhaps identical with *bassamensis*; but I do not think the union of the two at present justifiable. The specimen in this Museum identified by Mr. Butler as *T. Kochii* may be correctly named; but since it has neither carapace nor locality, I cannot be sure of the point.

* Nat. ungeflügelt. Ins. pt. i. p. 77, pl. iv. fig. 1.

Titanodamon tibialis (Simon).

Phrynus tibialis, Simon, Bull. Soc. Zool. Fr. 1876, p. 12.

We have two examples that I refer to this species—one ticketed Congo, the other West Africa. They were identified by Mr. Butler as *bassamensis* of Lucas; but, judging from the locality, it seems to me more probable that they are to be referred to *tibialis*, the type of which also came from the Congo.

Titanodamon Johnstonii, sp. n. (Pl. VIII. figs. 2-2 b.)

Colour nearly black, with two whitish patches on the femora and indications of spots of the same colour upon the muscular impressions of the terga and upon the posterior angles of these plates.

Carapace thickly granular, the lateral margin spicular, the front margin also slightly spicular; distance between the lateral eyes a little greater than half the median length of the carapace and three times as great as the distance between either of the lateral tubercles and the nearest point of the anterior border. Median tubercle smooth, shining, on the anterior border, the frontal process conspicuous, directed downwards and forwards and ending in a bluntly rounded apex.

Mandibles granular above, with two enlarged distal tubercles.

Chelæ.—*Coxa* granular distally; *trochanter* armed with an upper ridge of spinules, one longer inferior spine, and a number of shorter spines of varying lengths; *femur* granular throughout, the granules of the anterior surface very fine, those of the lower surface a little coarser, those of the upper much coarser and pointed; the upper anterior edge armed with 6 spines, 1 and 2 close together, the latter longer, 3 and 4 about equal to 1, the space between 2 and 3 equal to the space between 3 and 4, 5 and 6 a little smaller than 3 and 4, the space between them about equal to that between 4 and 5 and twice that between 3 and 4; the above described spaces occupied by larger and smaller spinules, the 6th separated from the distal end by a space which is greater than a third of the length of the femur; the lower edge armed with 5 longer spines, which gradually decrease in length distally, the first being about twice the length of the fifth, which is not much longer than some of the spinules which lie between the spines; between the first and the proximal angle of the femur there are three of these spinules, the lower of which is

the smallest. *Tibia* with the customary upper and lower longitudinal crest of granules, the lower and anterior surface weakly and sparsely granular; in addition to the three normal long distal spines, the upper edge is furnished with two or three smaller spines evenly spaced and decreasing in size posteriorly, the posterior one being always minute and sometimes scarcely recognizable amongst the rest of the spinules; the first of the three long spines about two thirds or more of the length of the second, which, like the third, is serrate anteriorly; the inferior distal spine of normal length and strength, the rest of the lower edge armed with about 4 spines and many spinules. *Tarsus* polished, the first spine of the upper surface about one third the length of the second.

Legs.—Femora spicular above, below, and in front; femur of first less than twice the width of the carapace, that of the second a little shorter than that of the third and a little longer than that of the fourth; tibia of second shorter than its femur, that of the third a little longer, that of the fourth still longer, the second tibial about equal to the distance between the lateral eyes.

Measurements in millimetres of type (σ).—Total length 32·5; carapace, width 17·5, median length 10, distance between eyes 5·2. Chela: length of femur 27·5, of tibia 30. Legs: femur of first 32·5, of second 21, of third 22, of fourth 20.

Locality of type.—Rio del Rez, near Old Calabar (*H. H. Johnston*); of other examples Old Calabar and the Cameroon Mountains (*H. H. Johnston*); Fernando Po and Gaboon.

The example selected as the type of this species is not the largest. Thus a male from Old Calabar has the carapace 19 millim. wide, and the femora of the five appendages measure respectively 35, 41, 23, 24·5, and 22; and the largest female from the Cameroons has the carapace 21 millim. wide, and the femora measure respectively 33, 42, 24, 25, and 23.

The three species of this genus known to me may be readily recognized by the characters given in the synoptical table; but it is not to be supposed that the distinctness of the species necessarily rests solely upon those characters that are mentioned in the tabular diagnosis. The above-mentioned example from Fernando Po was identified by Mr. Butler as *P. medius*, Herbst.

Genus NANODAMON, nov.

I am acquainted with three species of this genus:—

- a.* External surface of tarsus of chela granular like the tibia; trochanter with one long inferior spine; ocular tubercle granular.
- a*¹. Granulation of chelæ very coarse, the granules long, conical, the third spine from the extremity of the tibia very short in the adult . . . *annulatipes* (Wood).
- b*¹. Granulation much finer, the granules low and rounded; the third spine from the end of the tibia considerably longer *cinctipes*, sp. n.
- b.* External surface of tarsus of chela normally smooth; a second longish spine on the lower edge of the trochanter; ocular tubercle smoother. *diadema* (Sim.).

Nanodamon diadema (Simon).

Phrynus diadema, Simon, Bull. Soc. Zool. Fr. 1876, p. 13.

I can find no other description (!) of this species than the one referred to above; so that the correctness of my determination of some specimens in the British Museum as *diadema* is a matter of doubt. Whether rightly or wrongly determined, however, the species seems to be not uncommon in the region of Lake Nyasa, whence we have received from time to time from the Universities Mission about seven specimens of both sexes.

This is a very brightly coloured species, the whole of the upper surface being prettily striped with yellow and black.

Nanodamon annulatipes (Wood).

Phrynus annulatipes, Wood, Tr. Am. Phil. Soc. xiii. (n. s.) p. 441 (1869).

This species is evidently abundant at Natal, whence we have received ten examples of both sexes, dry and in spirit, from Gueinzius and H. A. Spencer.

The males of this species present the interesting feature of having the articles of the tibial segment of the legs of the first pair very much thicker than in the females.

Nanodamon cinctipes, sp. n.

Colour.—Carapace fuscous in the middle, the anterior border and lateral portions flavo-ferruginous, the lateral border with four brighter spots; abdomen fuscous, with a median reddish-yellow stripe, and a ring of the same colour surrounding the impression; chelæ fuscous, dactylus and tips of spines ferruginous; legs flavo-ferruginous, femora banded with fuscous.

Carapace coarsely granular; distance between the eyes

much greater than half its median length; median tubercle rather coarsely granular upon the anterior border, frontal process vertical, coarsely granular.

Mandibles coarsely granular above.

Chelæ.—*Trochanter* coarsely granular above, spined in front, with one inferior long spine; *femur* armed above with 4 spines, of which the first and second are close together; the second, third, and fourth equally spaced and gradually decreasing in length distally; armed below with 5 spines, the first on the proximal angle short, the second to the fifth decreasing in length. The *tibia* armed above with the normal two long granular distal spines, and behind them there is another spine about half as long as the others, and posteriorly to this another spinule; armed below with one long distal spine and two shorter ones behind it, the rest of the edge being armed with spinules. *Tarsus* normally spined, two above, the first short and vertical, and one below.

Legs less coarsely granular than in *N. annulatipes*.

Measurements in millimetres.—Total length 18; carapace, width 11·5, median length 6·5, distance between eyes 4. *Chelæ*: femur, length 9·5, width 2; tibia, length 11, width 2·5, length of superior distal spine 3·8. *Legs*: femur of second 12, of third 12, of fourth 11·5; tibia of second 11·3, of third 12, of fourth 11·8; second tibial of latter 3.

A single female example ticketed South Africa.

This species seems to lie almost midway between *annulatipes* and *diadema*. It is, on the whole, paler in colour than *annulatipes*, in which the legs are fuscous with flavous spots.

Genus PHRYNICHUS, Karsch.

Phrynichus Jayakari, sp. n. (Pl. VIII. fig. 3.)

♂.—*Colour*. Carapace ferruginous, head-region darker; chelæ and mandibles nearly black; legs ochraceous.

Carapace not coarsely granular, head-region elevated; distance between the eyes more than half the median length of the carapace; anterior border straight, apex of frontal process just visible from above; a lateral tooth-like process on each side opposite the outer surface of the mandible.

Mandibles granular above.

Chelæ immoderately long and slender; *coxæ* granular, with a series of spiniform hairs on inner edge; *trochanter* armed below with one strong spine and with another at the distal extremity of its anterior surface; the superior crest composed of small, close-set, subequal spinules. *Femur* armed above

on its proximal third with three evenly spaced spines, of which the first is the longest and close to the joint; between it and the joint, however, there is a shorter spine, and another one lies amongst the spinules between the first and second spine; the lower surface is armed with one longish spine near the joint, and with another much shorter one nearer the middle; the rest of this edge furnished with variously sized minute spines which decrease in size distally. *Tibia* cylindrical, granular, armed above distally with three long spines, the posterior of these more than half the length of the others; armed below with three spines, two apical normal, the third small but distinct, lying further back. *Tarsus* with a small basal superior spine as well as the normal long one.

Legs granular.

Measurements in millimetres.—Total length 22·5; carapace, width 12·5, median length 7·8, distance between eyes 4·2. Chela: length of femur 40, width 1·2; length of tibia 40, of its longest spine 6. Legs: femur of first 35, of second 18, of third 18·5, of fourth 17·5; tibia of second 20, of third 21, of fourth 22.

♀. Like the male, with shorter chelæ &c. Total length 17 millim., width of carapace 10, length of femur and tibia of chela 33, femur of first leg 20, of second 11, &c.

Two examples from Muscat (*Dr. A. G. Jayakar*).

Evidently very nearly allied to *P. Deflersi* of Simon (Bull. Soc. Zool. Fr. 1887, p. 454) from Obock and Aden, but differing in colour and in some particulars of spine-armature, the posterior of the three spines on the tibia of the chela being in *Deflersi* minute, and no mention being made of the third, the posterior, spine on the lower surface of this segment, and none of the lateral spine on the anterior border of the carapace, &c.

Phrynichus Phipsoni, sp. n. (Pl. VIII. fig. 4.)

? *Phrynus nigrimanus*, C. Koch, Die Arachn. xv. p. 69.

♂. Very closely allied to *P. Jayakari*.

Colour darker; carapace deep chestnut; abdomen olivaceo-flavous; chelæ ferruginous; legs olivaceo-flavous, spotted with pale markings.

Carapace a little smoother, flatter, its anterior border without a lateral tooth on each side.

Chelæ much shorter; *trochanter* with more anterior spines, its superior crest formed of a few separated spines; spine-armature of *femur* and *tibia* as in *Jayakari*.

Legs with femora much less coarsely and more sparsely granular.

Measurements in millimetres.—Total length 21; carapace, median length 7, width 12·3, distance between eyes 4. Chela: length of femur 20, of tibia 20·2. Legs: femur of first 23, of second 14, of third 14·5, of fourth 13·3.

Loc. Bombay (*H. M. Phipson*), one specimen; also a dried example from the same locality (*F. Moore*).

The species *P. Deflersi*, *P. Jayakari*, and *P. Phipsoni* may be recognized by the following table:—

- | | | |
|------------------|---|--------------------------|
| a. | Ridge on upperside of trochanter of chela consisting of a series of small closely packed spinules. | |
| a ¹ . | The first spine on the tibia of the chela minute; two distinct spines on the lower side of this segment | <i>Deflersi</i> , Sim. |
| b ¹ . | The first spine on the tibia of the chela about two thirds of the length of the second; three distinct spines on the lower edge of the segment | <i>Jayakari</i> , sp. n. |
| b. | Ridge on upper edge of trochanter of chela consisting of a small number of larger and smaller spines; chelæ dentate, almost as in <i>Jayakari</i> | <i>Phipsoni</i> , sp. n. |

Phrynichus pusillus, sp. n.

Colour.—Carapace reddish brown; abdomen paler, without pattern; chelæ reddish brown, the trochanter and the tarsus fuscous; legs not distinctly variegated.

Belonging to the same group as *lunatus* (Pallas), but differing in having the carapace much more coarsely, and at the same time less closely, granular. The frontal process invisible from above.

Chelæ closely resembling in spine-armature those of *P. lunatus*, but there are two strong equal spines at the base of the upperside of the femur.

The half-moon-shaped appendages on the second abdominal sternite obsolete, being merely represented by slight folds of the integument.

Measurements in millimetres.—♂. Total length 14; width of carapace 9·8, median length 5·5, distance between eyes 3·5. Chela: length of femur 15, of tibia 16. Legs: femur of first 17·5, of second 11, of third 12, of fourth 11.

♀. Total length 15; width of carapace 9; length of femur and tibia of palp 19; femur of first leg 12, of second 8.

Loc. Punduloya, Ceylon (*E. E. Green*); Ceylon (*Keyserling Coll.*).

*Supplementary Note on the Identity of
Tarantula reniformis (Linn.).*

Whilst the proof-sheets of this paper were in my hands for correction I quite unexpectedly received from Mr. C. A. Barber, the Superintendent of Agriculture of the Leeward Islands, a couple of specimens of a *Tarantula* from Antigua. These specimens prove to belong to the same species as those which I have spoken of, both in this paper and in Journ. Linn. Soc., Zool. vol. xxiv., as *T. Pallasii* (Blanchard). But the chief point of interest connected with the acquisition of examples from Antigua in particular lies in the fact, which I have more than once insisted upon, that Linnæus's description of *Phalangium reniforme*, the type species of the genus *Tarantula*, was based upon a figure of one of these animals that came from the island in question. Of course it is not possible to assert positively that Browne's figure is certainly a representation of a specimen belonging to the same species as those that Mr. Barber has just obtained; but the probability that it is so is undeniably great, and is enhanced by the fact that the available information respecting the size and colour of the original example agrees with what is known of these characters in *T. Pallasii*. It is consequently scarcely an exaggeration to say that we are now almost as sure of the identity of *T. reniformis* as we are of the identity of any other species established by Linnæus. And since we cannot reasonably hope ever to get nearer the truth of the matter than we are at present, every one will, I think, recognize the expediency of regarding these Antiguan specimens procured by Mr. Barber as being in reality referable to *T. reniformis*.

If this conclusion be accepted, the known synonymy of the species will stand as follows:—

Phalangium reniforme, Linn. Syst. Nat. ed. x. p. 619 (based upon fig. 3, pl. xli. of Browne's 'History of Jamaica').

Tarantula reniforme, Fabr. Ent. Syst. ii. p. 432.

Phrynus Pallasii, Blanchard, Organisation du Règne Animal, Arachnides, pl. xv. p. 170, pl. x.

Tarantula Pallasii, Pocock, Journ. Linn. Soc., Zool. xxiv. p. 533, pl. xl. fig. 3.

The known distribution of the species is Antigua, Montserrat, and Martinique.

In conclusion, I wish to express my great indebtedness to Mr. C. A. Barber for his spontaneous act of kindness in sending to the British Museum the specimens of the species, which he recognized as a desideratum for the National Collection.

EXPLANATION OF THE PLATES.

PLATE VII.

- Fig. 1. *Tarantula lævifrons*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 1 a. Ditto. External view of upper edge of tarsus.
 Fig. 2. *Tarantula azteca*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 3. *Tarantula macrops*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 3 a. Ditto. Lateral view of anterior end of carapace.
 Fig. 4. *Tarantula Whitei* (Gerv.). Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 4 a. Ditto. External aspect of tarsus.
 Fig. 5. *Tarantula Gervaisii*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 5 a. Ditto. External aspect of tarsus.
 Fig. 6. *Tarantula pulchripes*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 6 a. Ditto. External aspect of tarsus.
 Fig. 7. *Tarantula Thorellii*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 8. *Tarantula tessellata*, Pocock. Penes of male protruding between genital operculum and second sternite.
 Fig. 8 a. Ditto. Lower side of genital operculum of female.

PLATE VIII.

- Fig. 1. *Heterophrynus cervinus*, sp. n. Right chela, nat. size.
 Fig. 2. *Titanodamon Johnstoni*, sp. n. Nat. size.
 Fig. 2 a. Ditto. Genital operculum and second sternite, to show bud-like appendages.
 Fig. 2 b. Ditto. Anterior half of carapace from above, to show frontal process.
 Fig. 3. *Phrynichus Jayakari*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.
 Fig. 4. *Phrynichus Phipsoni*, sp. n. Carapace and chela, $\times 1\frac{1}{2}$.

XXXVIII.—*Abnormal Variability in the Antennal Characters of Cosmophila erosa*, Hübn. By ARTHUR G. BUTLER, Ph.D. &c.

THE structure of the male antennæ in moths has very frequently been used as the sole character for distinguishing genera. Mr. Hampson, however, has decided to regard all characters found only in one sex as of secondary importance, and consequently has degraded all genera which can only be separated when both sexes are known, or by the male sex apart from the female, to the rank of sections (or subgenera).

Antennal structure frequently differs widely in species which unquestionably are very nearly related, as, for instance, in *Bombycia*, the males of *B. viminalis* having the antennæ strongly pectinated, whereas in *B. persimilis*, which has the same pattern and coloration, they are serrate-fasciculated.

The genus *Cosmophila*, according to Guenée, has the